What is claimed is:

1. An instantaneous encoding apparatus for analyzing an input signal using the data calculated by a frequency analysis, comprising:

a unit signal generator for generating one unit signal or plural unit signals, wherein each unit signal has such energy that exists only at a certain frequency, and wherein frequency and amplitude of each unit signal are variable continuously with time;

an error calculator for calculating an error between spectrum of said input signal and spectrum of the unit signal or spectrum of the sum of the plural unit signals in amplitude/phase space;

altering means for altering said one unit signal or said plural unit signals to minimize said error; and

outputting means for outputting said one unit signal or said plural unit signals altered by said altering means as an analysis result for said input signal.

2. The instantaneous encoding apparatus as claimed in claim 1, wherein said generator determines the number of unit signals to be generated responsive to the number of local peaks of power spectrum for said input signal.

3. The instantaneous encoding apparatus as claimed in claim 1, wherein said one unit signal or each of said plural unit signals includes as its parameters a center frequency of said input signal, a time variation rate of said center frequency, an amplitude of said input signal at said center frequency and a time variation rate of said amplitude.

4. The instantaneous encoding apparatus as claimed in claim 3, wherein said parameters are modeled by a function.

5. A sound separation apparatus for separating a target signal from a mixed

input signal, wherein the mixed input signal includes the target signal and one or more sound signals emitted from different sound sources, comprising:

a frequency analyzer for performing a frequency analysis on said mixed input signal and calculating spectrum and one or more frequency component candidate points at each time;

feature extraction means for extracting feature parameters which are estimated to correspond with said target signal, wherein the feature extraction means comprises a local layer for analyzing local feature parameters using said spectrum and said frequency component candidate points, and wherein the feature extraction means further comprises one or more global layers for analyzing global feature parameters using said feature parameters from said local layer, and;

signal regenerator for regenerating a waveform of the target signal using said feature parameters extracted by said feature extraction means.

6. The sound separation apparatus as claimed in claim 5, wherein said local layer and global layers mutually supply the feature parameters analyzed in each layer to update the feature parameters in each layer based on said supplied feature parameters.

7. The sound separation apparatus as claimed in claim 6, wherein said local layer is an instantaneous encoding layer for calculating frequencies, variations of said frequencies, amplitudes, and variations of said amplitudes for said frequency component candidate points.

8. The sound separation apparatus as claimed in claim 6, said global layer comprising:

a harmonic calculation layer for grouping the frequency component candidate points having same harmonic structure based on said calculated frequencies and variations of frequencies at said frequency component candidate points and then

calculating a fundamental frequency of said harmonic structure, variations of said fundamental frequency, harmonics contained in said harmonic structure, and variations of said harmonics; and

a pitch continuity calculation layer for calculating a continuity of signal using said fundamental frequency and said variation of the fundamental frequency at each point in time.

9. The sound separation apparatus as claimed in claim 6, wherein said global layer further comprises a sound source direction prediction layer for predicting directions of sound sources for said mixed input signal.

10. The sound separation apparatus as claimed in claim 9, said global layer comprising:

a harmonic calculation layer for grouping frequency component candidate points having same harmonic structure based on said frequencies and the variations of frequency of said frequency component candidate points as well as the sound source directions predicted by the sound source direction prediction layer, and calculating a fundamental frequency of said harmonic structure, harmonics contained in said harmonic structure, and variation of the fundamental frequency and the harmonics; and

a pitch continuity calculation layer for calculating a continuity of signals using said fundamental frequency and said variation of the fundamental frequency at points of time.

11. The sound separation apparatus as claimed in claim 7, wherein time variation rates are used as said variations.

12. The sound separation apparatus as claimed in claim 6, wherein each of said layers is logically composed of one or more computing elements, each computing elements being capable of calculating feature parameters, each computing

elements mutually exchanging said calculated feature parameters with other elements included in upper and lower adjacent layers of one layer.

13. The sound separation apparatus as claimed in claim 12, said computing element executing steps comprising:

calculating a first consistency function indicating a degree of consistency between the feature parameters supplied from the computing element included in the upper adjacent layer and said calculated feature parameters,

calculating a second consistency function indicating a degree of consistency between the feature parameters supplied from the computing element included in the lower adjacent layer and said calculated feature parameters,

updating said feature parameters to maximize a validity indicator that is represented by a product of said first consistency function and said second consistency function.

14. The sound separation apparatus as claimed in claim 13, wherein said validity indicators are supplied to computing elements included in said lower adjacent layer.

15. The sound separation apparatus as claimed in claim 14, wherein a threshold value is calculated based on said supplied validity indicator and wherein said calculating element may be eliminated if the value of said validity indicator is less than said threshold value.

16. The sound separation apparatus as claimed in claim 14, wherein if the value of said validity indicator exceeds a given value, new computing elements are created in said lower layer.

17. An instantaneous encoding program for analyzing an input signal using the data calculated by a frequency analysis, being configured to execute the steps of:

generating one unit signal or plural unit signals, wherein each unit signal has such energy that exists only at a certain frequency, and wherein frequency and amplitude of each unit signal are variable continuously with time;

calculating an error between spectrum of said input signal and spectrum of the unit signal or spectrum of the sum of the plural unit signals in amplitude/phase space;

altering said one unit signal or said plural unit signals to minimize said error; and

outputting said one unit signal or said plural unit signals altered by said altering means as an analysis result for said input signal.

18. The instantaneous encoding program as claimed in claim 17, wherein said generating step includes determining the number of unit signals to be generated responsive to the number of local peaks of power spectrum for said input signal.

19. The instantaneous encoding program as claimed in claim 17, wherein said one unit signal or each of said plural unit signals includes as its parameters a center frequency of said input signal, a time variation rate of said center frequency, an amplitude of said input signal at said center frequency and a time variation rate of said amplitude.

20. The instantaneous encoding program as claimed in claim 19, wherein said parameters are modeled by a function.

21. A sound separation program for separating a target signal from a mixed input signal, wherein the mixed input signal includes the target signal and one or more sound signals emitted from different sound sources, being configured to execute the steps of:

performing a frequency analysis on said mixed input signal to calculate spectrum and one or more frequency component candidate points at each time;

extracting feature parameters which are estimated to correspond with said target signal by utilizing a logically-constructed local layer and one or more logically-constructed global layers , wherein said local layer uses said spectrum and said frequency component candidate points to analyze local feature parameters, and wherein said one or more global layers uses said feature parameters from said local layer to analyze global feature parameters, and;

regenerating a waveform of the target signal based on said feature parameters extracted by extracting step.

22. The sound separation program as claimed in claim 21, wherein said local layer and global layers mutually supply the feature parameters analyzed in each layer to update the feature parameters in each layer based on said supplied feature parameters.

23. The sound separation program as claimed in claim 22, wherein said local layer is an instantaneous encoding layer for calculating frequencies, variations of said frequencies, amplitudes, and variations of said amplitudes for said frequency component candidate points.

24. The sound separation program as claimed in claim 22, said global layer comprising:

a harmonic calculation layer for grouping the frequency component candidate points having same harmonic structure based on said calculated frequencies and variations of frequencies at said frequency component candidate points and then calculating a fundamental frequency of said harmonic structure, variations of said fundamental frequency, harmonics contained in said harmonic structure, and variations of said harmonics; and

a pitch continuity calculation layer for calculating a continuity of signal using said fundamental frequency and said variation of the fundamental frequency at each point in time.

25. The sound separation program as claimed in claim 22, wherein said global layer further comprises a sound source direction prediction layer for predicting directions of sound sources for said mixed input signal.

26. The sound separation program as claimed in claim 25, said global layer comprising:

a harmonic calculation layer for grouping frequency component candidate points having same harmonic structure based on said frequencies and the variations of frequency of said frequency component candidate points as well as the sound source directions predicted by the sound source direction prediction layer, and calculating a fundamental frequency of said harmonic structure, harmonics contained in said harmonic structure, and variation of the fundamental frequency and the harmonics; and

a pitch continuity calculation layer for calculating a continuity of signals using said fundamental frequency and said variation of the fundamental frequency at points of time.

27. The sound separation program as claimed in claim 23, wherein time variation rates are used as said variations.

28. A sound separation program as claimed in claim 22, wherein each of said layers are logically composed of one or more computing elements, each computing elements being capable of calculating feature parameters, each computing elements mutually exchanging said calculated feature parameters with other elements included in upper and lower adjacent layers of one layer.

29. The sound separation program as claimed in claim 28, said computing element executing steps comprising:

calculating a first consistency function indicating a degree of consistency

between the feature parameters supplied from the computing element included in the upper adjacent layer and said calculated feature parameters,

calculating a second consistency function indicating a degree of consistency between the feature parameters supplied from the computing element included in the lower adjacent layer and said calculated feature parameters,

updating said feature parameters to maximize a validity indicator that is represented by a product of said first consistency function and said second consistency function.

30. The sound separation program as claimed in claim 29, wherein said validity indicators are supplied to computing elements included in said lower adjacent layer.

31. The sound separation program as claimed in claim 30, wherein a threshold value is calculated based on said supplied validity indicator and wherein said calculating element may be eliminated if the value of said validity indicator is less than said threshold value.

32. The sound separation program as claimed in claim 30, wherein if the value of said validity indicator exceeds a given value, new computing elements are created in said lower layer.